

Ideation Phase

Literature Survey

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Project Name	AI-based discourse for Banking Industry

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Introduction:

Industries are forced to evolve and update their practices due to technological advances and the contemporary market. The banking sector is one of the most developed sectors and is always looking for the latest technological solutions that improve its efficiency.

Net banking websites are complex and involve navigating through a lot of pages to find the information you need. Bank staff undergoes a lot of stressful situations when communicating with clients directly. Such situations can be avoided gracefully by using chatbots.

Only 32% of companies in the finance industry currently use AI chatbots, and 37% are planning to start using them within 18 months said a report from Salesforce. This results in a potential growth rate of 118% which indicates the demand in the industry.

A smart chatbot takes a query from the user in natural language and gives the appropriate response for the same. This paper aims to discuss the relevance of chatbots in the banking sector and explore how chatbots can be implemented using natural language processing techniques that can be used in the banking industry.

Literature Survey:

This paper [1] presents the use of the RASA framework for building smart context-remembering chatbots, it also describes how Rasa NLU works and how its performance is elevated by using intent recognition and entity extraction. It also compares the accuracies of entity extraction using Rasa NLU and a NN, results show Rasa NLU performs better to extract entities when whole sentences are provided as compared to neural networks which require segmented inputs. This paper discusses Rasa by implementing a chatbot related to the finance domain, using which the users can inquire about stock-related information.

RASA NLU can introduce a vital component in intelligent chatbot systems. We can compose the system to extract the entity after intent recognition. This can be further improved for complicated sentences and more entities.

This paper [2] briefly discusses advancements in the field of AI and how this has led to major shifts in some organizations about how they operate. It further mentions how the banking industry has moved to use chatbots for providing an interface to customers so that they can have an assistant throughout the day for service. This paper also gauges the ability of current chatbots to provide all the services that a user needs.

It includes several strategies for managing dialogue in the banking and finance industry based on ontology. Although further use of AI can make the chatbot not only respond to questions but also self-learning to improve itself in more stages, improving user service quality and also reducing human load.

References:

[1] Jiao, Anran. (2020). An Intelligent Chatbot System Based on Entity Extraction Using RASA NLU and Neural Network. Journal of Physics: Conference Series. 1487. 012014. 10.1088/1742-6596/1487/1/012014.

[2] Fathima, Sasha & Student, Suhel & Shukla, Vinod & Vyas, Dr Sonali & Mishra, Ved P. (2020). Conversation to Automation in Banking Through Chatbot Using Artificial Machine Intelligence Language. 10.1109/ICRITO48877.2020.9197825.

[3] Singh, Netra & Singh, Devender. (2019). Chatbots and Virtual Assistant in Indian Banks. *Industrija*. 47. 75-101. 10.5937/industrija47-24578.

[4] Petr Lorenc, "Joint model for intent and entity recognition" in arXiv:2109.03221v1 [cs.CL] 7 Sep 2021

[5] The Rasa documentation. [Online]. Available: <https://rasa.com/docs/rasa/2.x>

[6] Django documentation. [Online]. Available: <https://docs.djangoproject.com/en/4.0/>

[7] Adamopoulou, Eleni, and Lefteris Moussiades. "An overview of chatbot technology." In IFIP International Conference on Artificial Intelligence Applications and Innovations, pp. 373-383. Springer, Cham, 2020.

[8] Cahn, Jack. "CHATBOT: Architecture, design, & development." University of Pennsylvania School of Engineering and Applied Science Department of Computer and Information Science (2017).

[9] Hien, Ho Thao, Pham-Nguyen Cuong, Le Nguyen Hoai Nam, Ho Le Thi Kim Nhung, and Le Dinh Thang. "Intelligent assistants in higher- education environments: the FIT-EBot, a chatbot for administrative and learning support." In Proceedings of the ninth international symposium on information and communication technology, pp. 69-76. 2018.

[10] Waterman, Chinia. 2018. "Consumer Online Banking Trends 2018". Humley. <https://humleyai.com/2018/09/18/consumer-online-banking-trends-2018/>.

[11] "Chatbots, A Game Changer For Banking & Healthcare, Saving \$8 Billion Annually By 2022". 2017. Juniperresearch.Com. <https://www.juniperresearch.com/press/chatbots-a-game-changer-for-banking-healthcare>.

[12] Pal, Singh Netra, and Devender Singh. "Chatbots and virtual assistant in Indian banks." *Industrija* 47, no. 4 (2019): 75-101.